The Next Generation Air Transportation System

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JPDO 3 Year View

FY06

Achievement of a clear, affordable roadmap to achieve NextGen

Developed Concept of Operations, Enterprise Architecture, Roadmap and Benefits

Defined the Required Portfolio to implement the Roadmap

Defined Investment Options – Institutional, Policy and Technology Tradeoffs

FY07

Achieve a funded portfolio of aligned programs across agencies

Refine Concept of Operations, Architecture, Roadmap, Benefits and Portfolio

Complete Program Planning of Portfolio Elements
Report on Performance

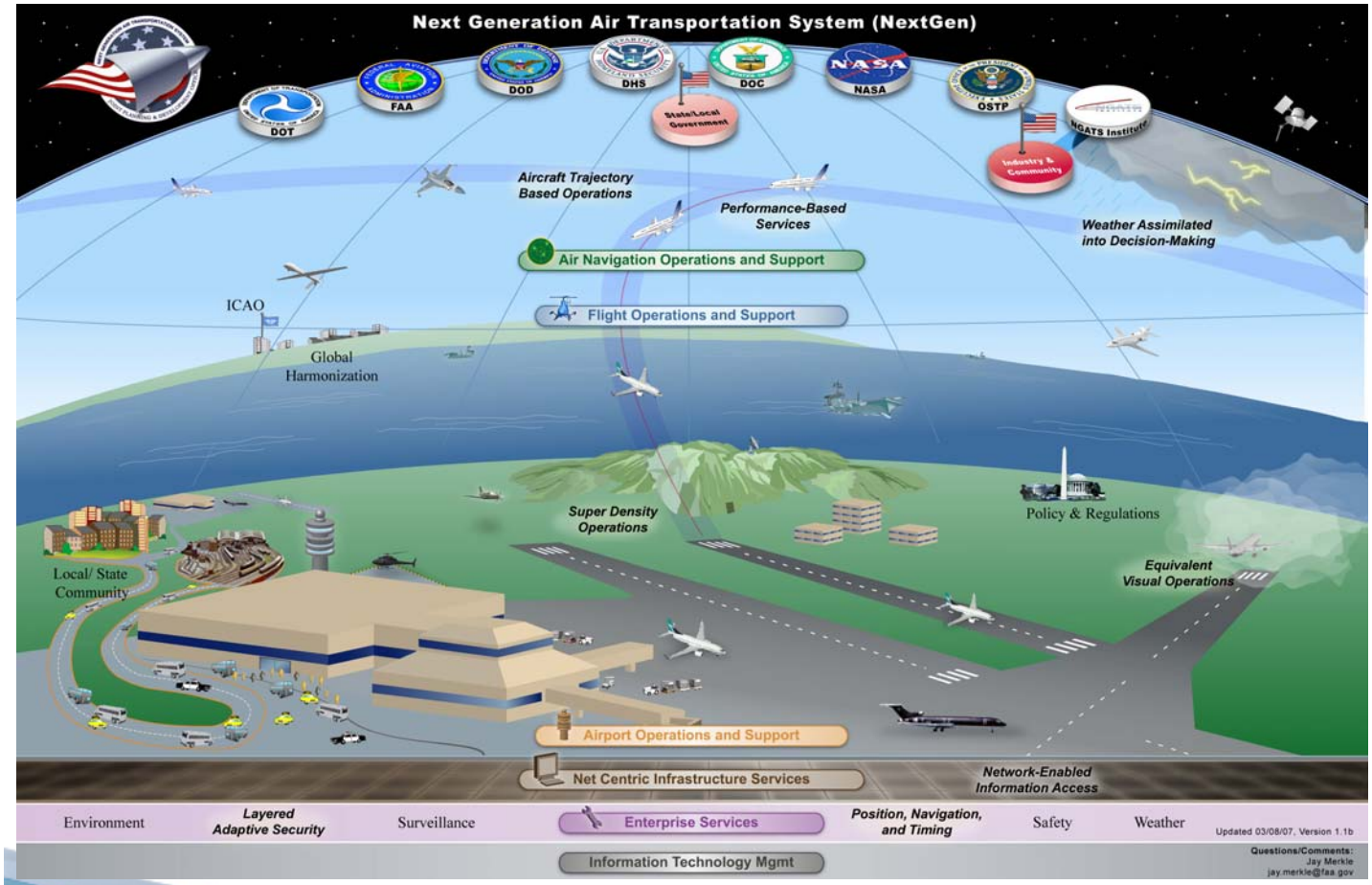
FY08

Further inclusion of Agency R&D and Implementation and the management of the Portfolio

Achieve additional inclusion of operational scenarios, definitions, and off-nominal situations in EA and ConOps

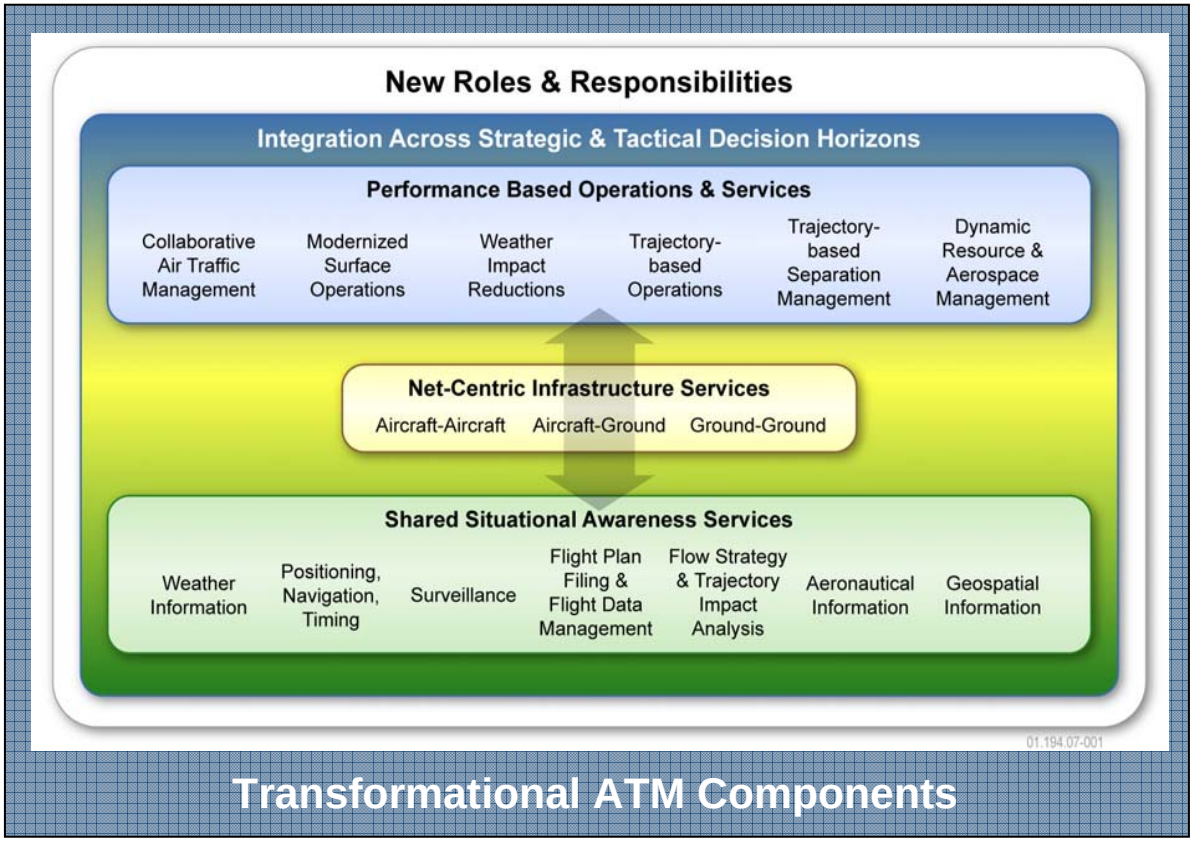
Transition from Planning to Implementation

Concept of Operations
Operational View



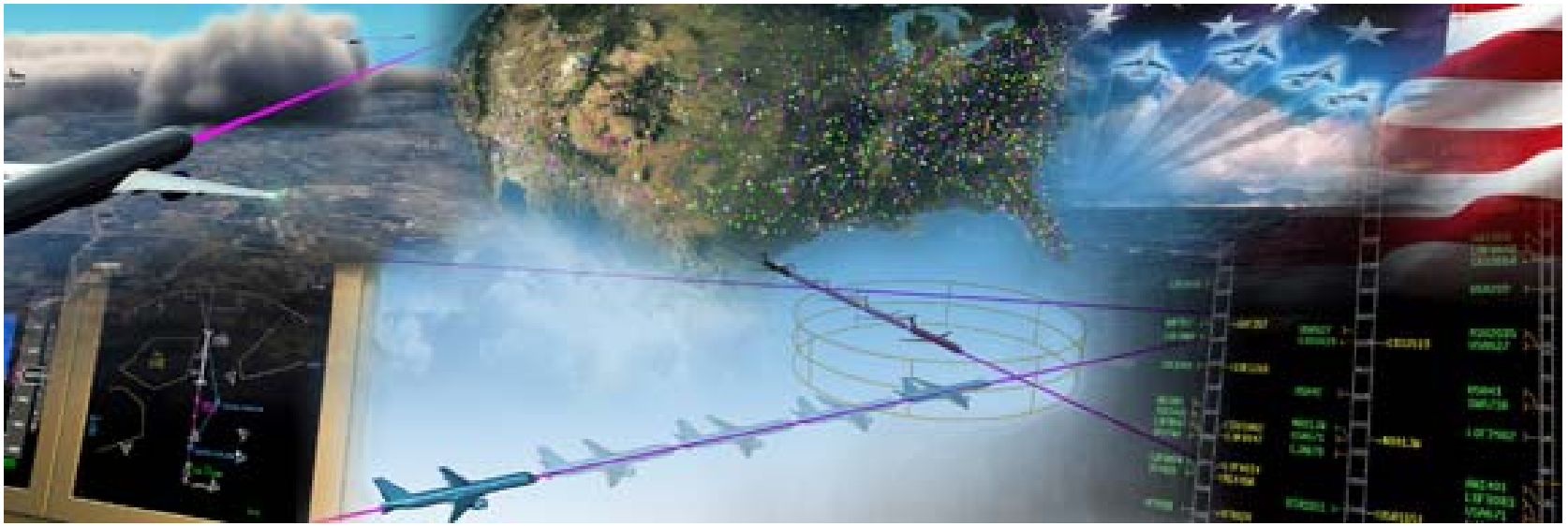
The overall operational environment supported by NextGen.

System-Wide Transformation – The Key is "Transformation"



Transformational ATM Components

Key Capabilities - Aircraft Trajectory-Based Operations



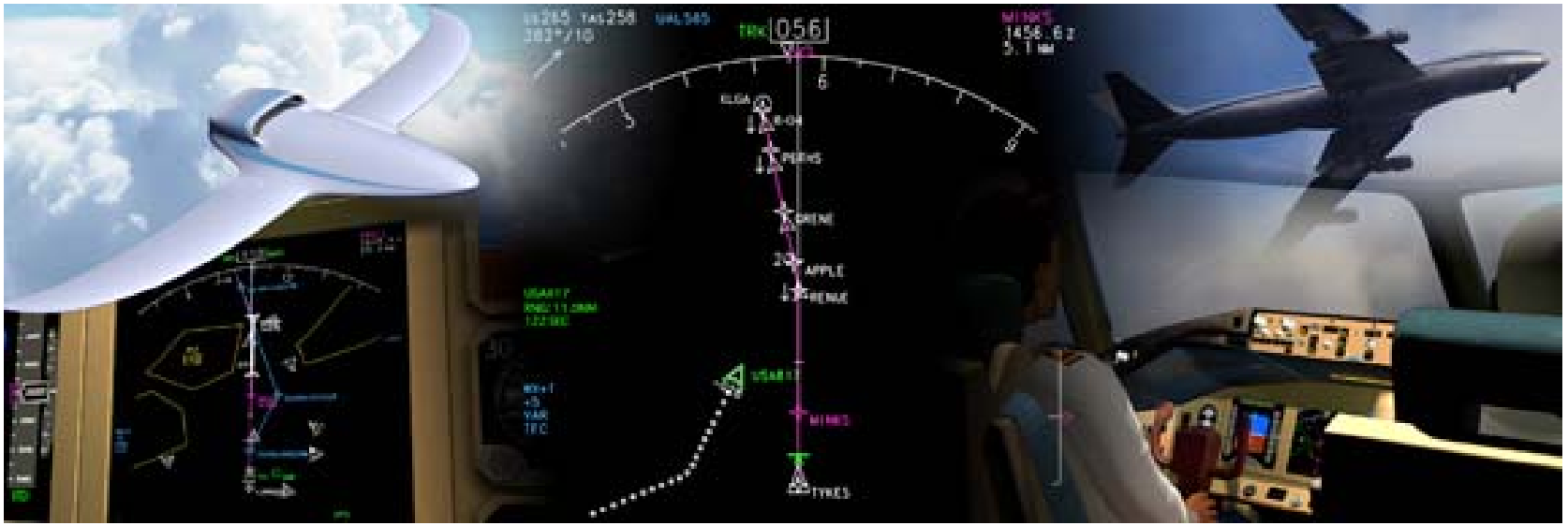
Services and Operations based on precise trajectory execution

- Self-Separation Services
- Flow Corridors
- Super Density Arrival/Departure Airspace

Key Capabilities - Super Density Operations

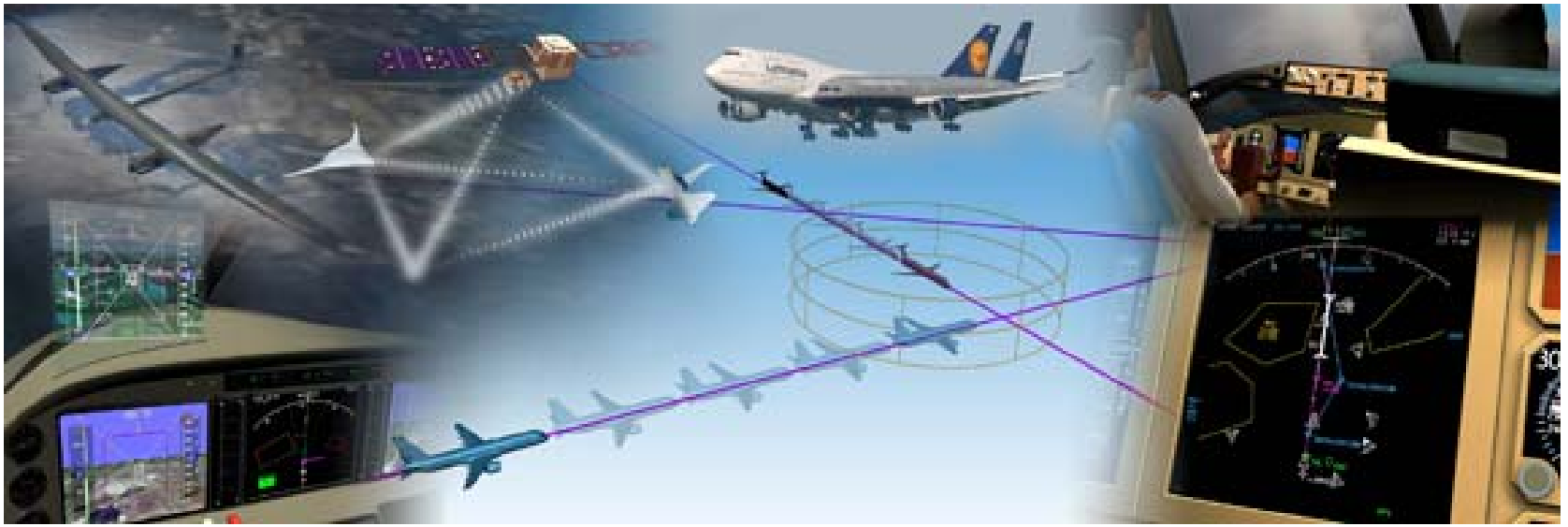
- Use of RNP operations and procedures that eliminate requirements for visual operations
- Mitigation of wake vortex constraints through detection and real-time adaptation of separations
- Improved runway incursion prevention algorithms to increase efficiency and safety
- Automatic distribution of runway braking action reports
- Distribution of taxi instructions before landing that can be automatically executed without waiting for a separate clearance
- Use of aircraft sensors to more quickly identify the need for de-icing operations, increasing efficiency of surface movements.

Key Capabilities - Equivalent Visual Operations



- Improved information availability which allows aircraft operation without regard to viability
- Access to PNT enables increased accessibility for both airport surface and arrival and departure operations
- Enables operators more predictable and efficient operations regardless of meteorological conditions

Key Capabilities – Performance-Based Operations and Services



- Collaborative ATM
- Modernized Surface Ops.
- Weather Impacted Ops.
- Trajectory-based Ops.
- Trajectory-based Separation Management
- Dynamic Resource & Aerospace Management

Key Capabilities - Weather Assimilated into Decision-Making

- Net-centric weather information is made available and understandable to all approved users.
- A reliable virtual, common weather picture is foundational for optimal air transportation decision-making.
- Presentation of weather data is tailored to user operational needs.
- Widespread use of integrated probabilistic weather-related decision support systems
- Automatic updates to users based on operational need
- An adaptive observing system integrating ground, airborne, and spaced based sensors

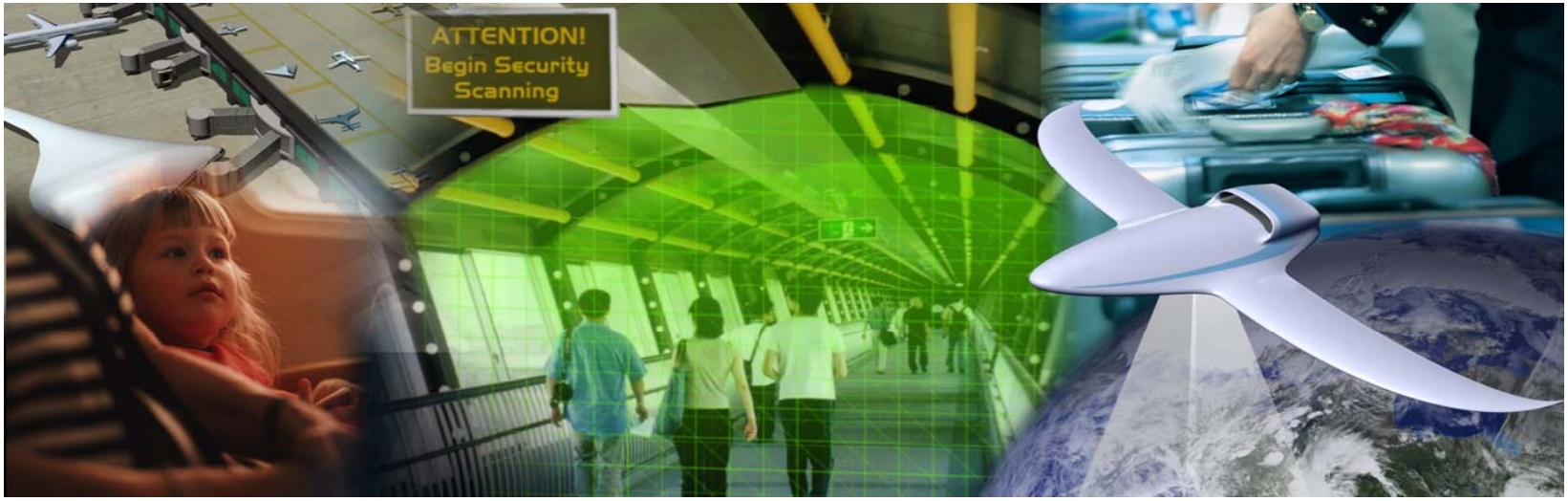
Key Capabilities - Network Enabled Access

- Network Enabled Operations (NEO)
- Network Enabled Infrastructure (NEI)
- Network Enabled Weather (NEW)

Key Capabilities – Position, Navigation and Timing Services (PNT)

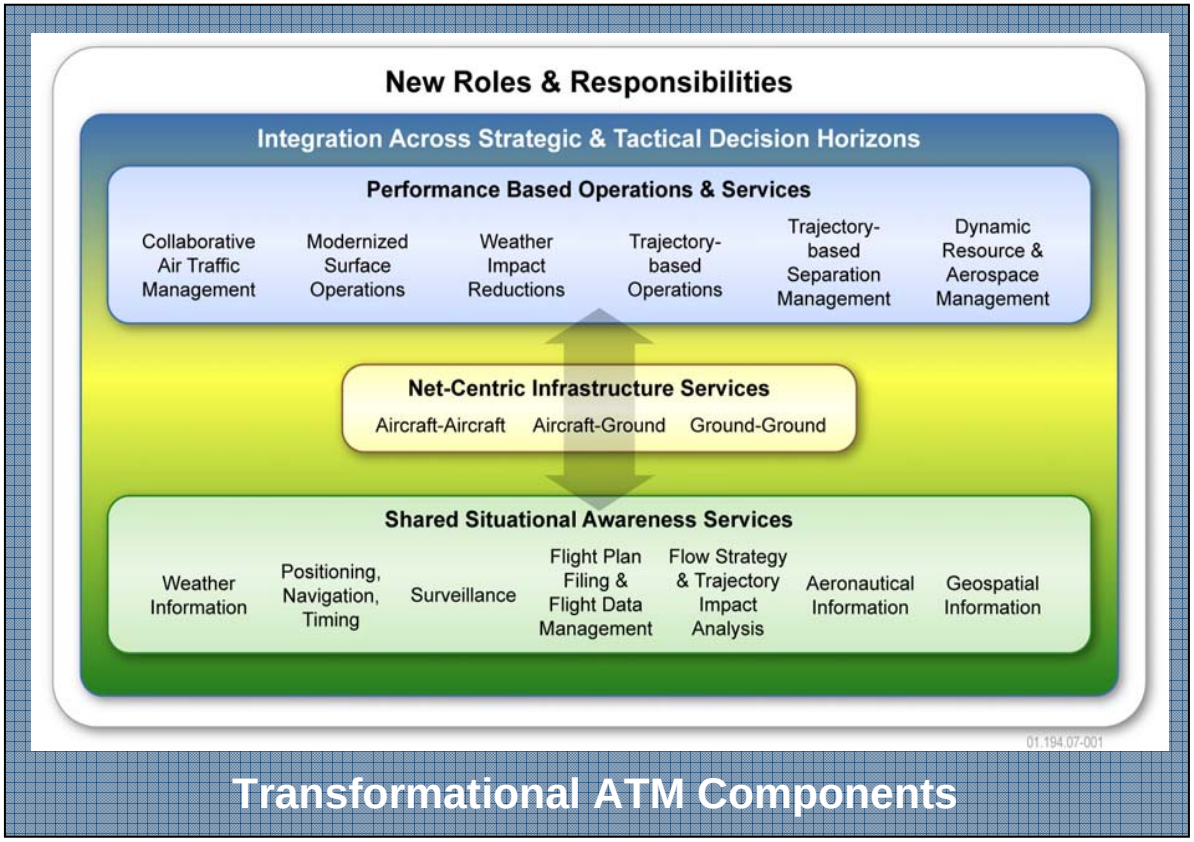
- Air routes are independent of the location of ground-based navigation aids.
- RNAV is used everywhere; RNP is used where required to achieve system objectives, which reduces controller workload and increases efficient use of NAS resources (airspace and runways).
- System performance meets operational needs to service the demand.
- Increased availability of guided approaches at smaller airports (mostly) for general aviation with lower minimums

Key Capabilities – Layered Adaptive Security



- Adaptive Security for People, Cargo, Airports and Aircraft
- Risk Assessment-Driven Evaluation and Response
- Positive Identification for People and Cargo
- Preventive Threat Detection and Mitigation

System-Wide Transformation – The Key is "Transformation"

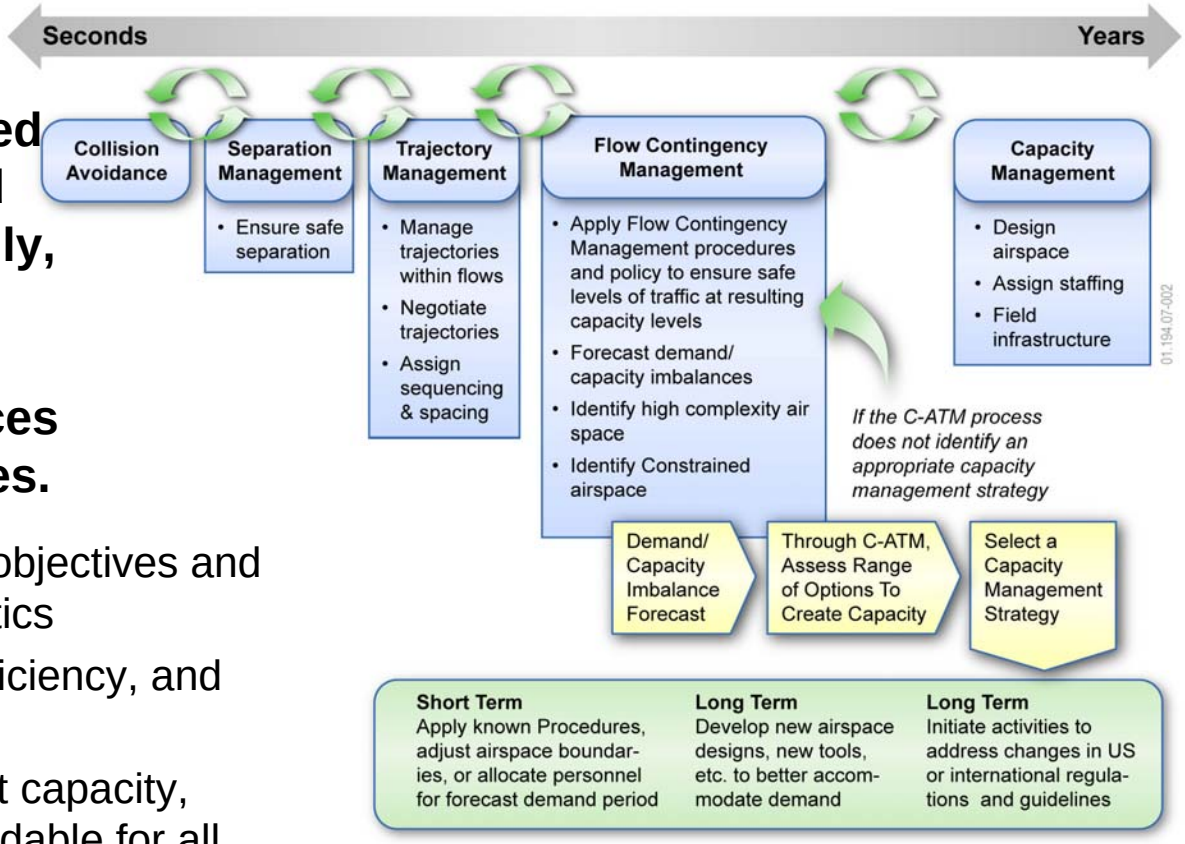


Transformational ATM Components

ATM – Goals and Objectives

ATM is the dynamic, integrated management of air traffic and airspace—safely, economically, and efficiently—through the cost-effective provision of facilities and seamless services in collaboration with all parties.

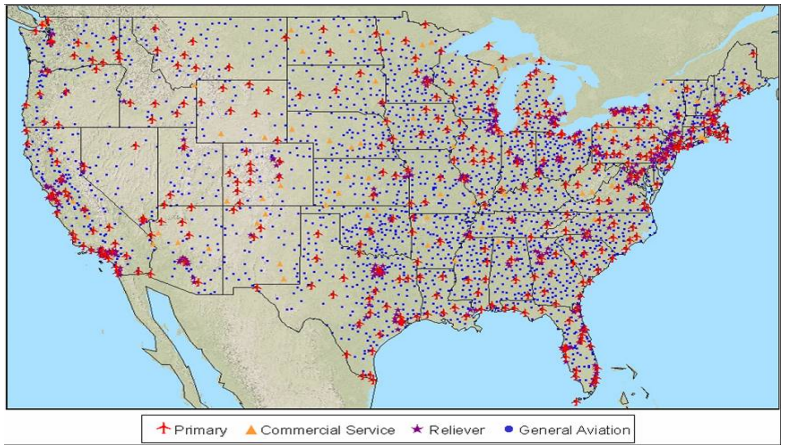
- Meet both a diverse operational objectives and aircraft capabilities and characteristics
- Meet users needs for access, efficiency, and predictability.
- Provide safe, secure, of sufficient capacity, environmental acceptable and affordable for all users

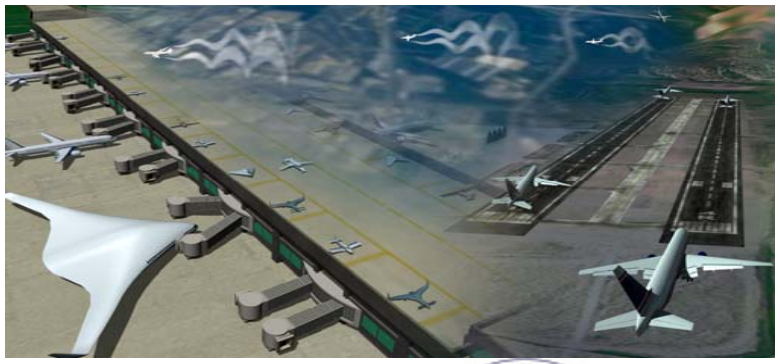


Airports – Goals and Objectives

Airports are the nexus for many NextGen transformational elements:

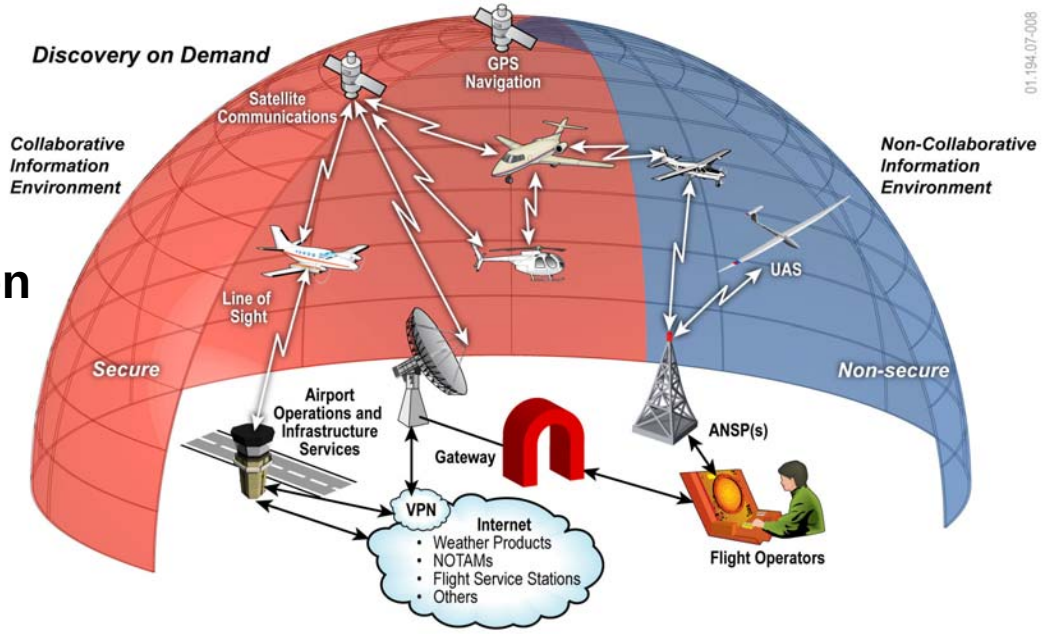
- Operational services support integrated management of aircraft and ground support equipment on the ramp during all weather operations
- Technology enables improved access and efficient utilization of common use airport infrastructure
- Mission support services enable preservation of critical airports, efficient development of airport and regional systems, and NextGen enabled design standards





Net-Centric Infrastructure Services – Goals and Objectives

The concept of net-centricity ensures a robust, globally interconnected network in which information is shared in a timely and consistent way among users, applications, and platforms during all phases of aviation transportation efforts.

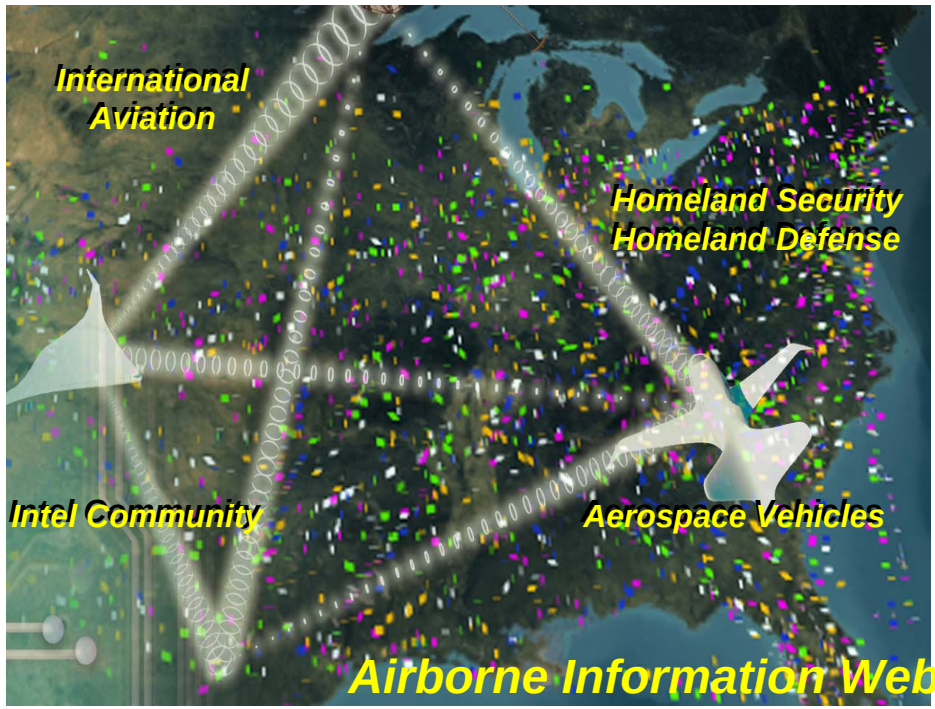


- Supports air navigation service, airport, and flight operations
- Enables shared situational awareness
- Supports compliance and regulation oversight
- Supports security, safety, environmental, and performance management services

Shared Situational Awareness – Goals and Objectives

Access can be accomplished in an automated and virtual fashion where a standing request for information by subscribers is produced, using established protocols and standards.

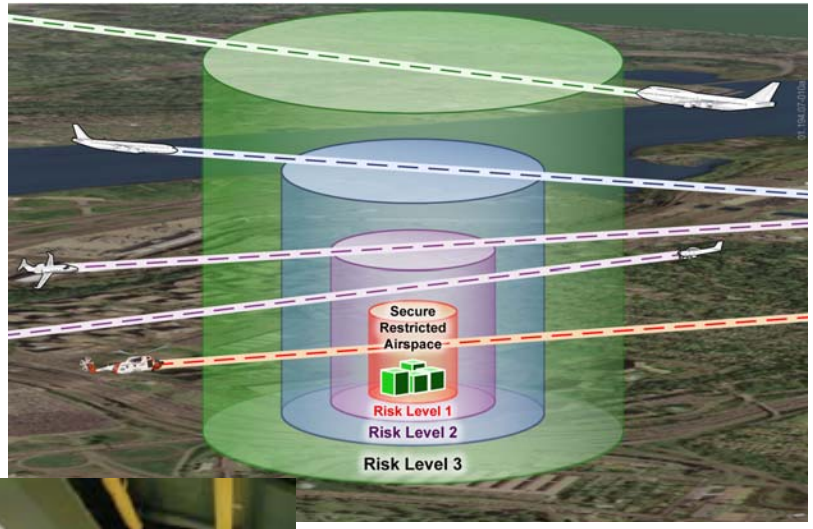
- Shared Situation Awareness
  - Real-time free-flow of info from private, commercial, & government sources, integrated internationally
  - Push/pull processes, secured according to needs and priorities
  - Common awareness of day-to-day ops, events, crises
- Aircraft are integral “nodes” in network
- Integrated surveillance system across agencies and borders

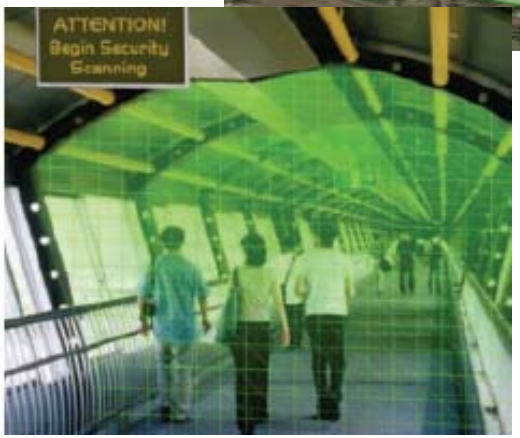


Layered Adaptive Security Services – Goals and Objectives

To maintain effective security management across major stakeholders, a collaborative framework is composed of the following key functions and processes:

- National Aviation Security Policy
- Aviation Security Stakeholder Involvement
- Aviation Integrate Risk Management (IRM)
- Aviation Security Implementation
- Aviation Security Assurance





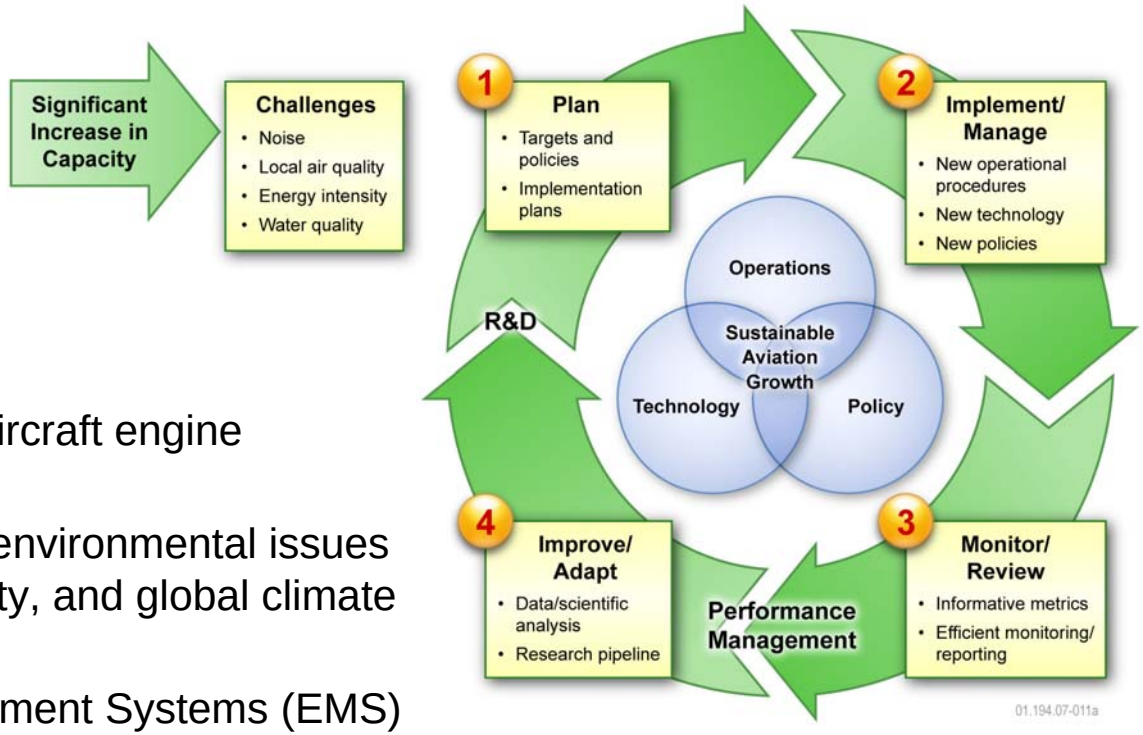
Safety – Goals and Objectives

The key to success is the implementation of safety management systems integrated at the national level. The integrated safety management approach being developed includes:

- a national aviation safety strategy,
- a safety improvement culture,
- a prognostic safety risk management (SRM) capability,
- a robust and protected safety information sharing and analysis procedure, and
- an enhanced safety assurance function.

Environment – Goals and Objectives

NextGen Environmental objectives include providing a framework to enable environmental protection that allows for sustained aviation growth:



- Reduce significant noise and aircraft engine emissions in absolute terms
- Proactively address emerging environmental issues (e.g. water quality, energy intensity, and global climate change)
- Enable Environmental Management Systems (EMS) capabilities system wide

Global Harmonization – Goals and Objectives

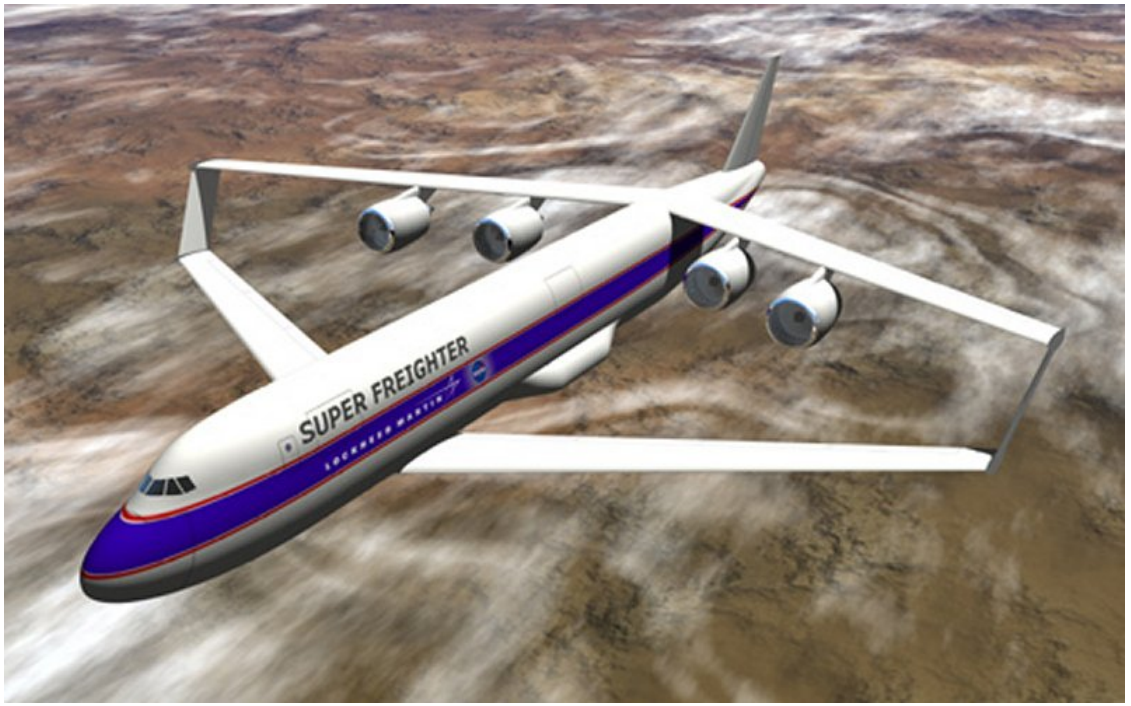
A key step toward gaining global endorsement of the NGATS is to be sure every technology, policy, and procedural option or "element" is compatible with existing global requirements:

- Harmonized systems, procedures for "borderless" interoperability
- Partnerships to promote common solutions for common problems
- Early, continuing participation in developing global standards, procedures to ensure satisfaction of US requirements
- Promote US position and preferred standards globally

Upcoming JPDO Additions – Aircraft/Avionics – Goals and Objectives

NextGen Aircraft objectives would likely include developing a framework to integrate transformational technologies and capabilities for airframes, engines, and equipage:

- Airframe Technologies
- Engine Performance
- Equipage Improvements



Thank You

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